

Attorney Docket No.: 0180221

REMARKS

Prior to the present response, claims 1-7 were pending in the present application. No claims are amended by the present response. Thus, claims 1-7 remain pending in the present application. Reconsideration and allowance of outstanding claims 1-7 in view of the following remarks are respectfully requested.

A. Rejection of claims 1-7 under 35 U.S.C. § 102(b)

The Final Office Action dated August 3, 2009 (hereinafter "Office Action") rejects claims 1-7 under 35 U.S.C. § 102(b) for purported anticipation by U.S. Patent Number 5,780,891 to Kauffman et al. (hereinafter "Kauffman"). *See*, pp. 2-3, item 2 of the Office Action. For the reasons discussed below, Applicants respectfully submit that the present invention, as defined by previously presented independent claim 1, is patentably novel and inventive over Kauffman.

Applicants respectfully reiterate that a patentably distinctive difference between the present invention, as defined by previously presented independent claim 1, and the disclosure provided by Kauffman, is the disposition of the anti-reflective interpoly layer relative to a first polysilicon layer of the core stack comprised by the present invention's flash memory device. Moreover, as Applicants have previously noted, previously presented independent claim 1 specifically requires that patentably distinguishable structural difference, unambiguously reciting "an anti-reflective interpoly layer atop and in contact with the first polysilicon layer." *See*, previously presented claim 1 of the present application.

In contrast to the structure described and specifically claimed in the present application, the disclosure of Kauffman expressly teaches formation of an intervening silicon dioxide layer between the first polysilicon layer and the anti-reflective interpoly layer. Specifically, Kauffman teaches that first silicon dioxide layer 20 (rather than an anti-reflective interpoly layer) is formed on first polysilicon layer 18. *See* col. 3, ll. 60-64, and Figure 3 of Kauffman. Subsequently, “oxynitride layer 22 is deposited over first silicon dioxide layer 20,” (not first polysilicon layer 18). *Id.* at col. 4, l. 1-3. Furthermore, Kauffman is unequivocal in stating that the anti-reflective silicon oxynitride interpoly layer 22 is not to be conflated or confused with other interpoly materials. For example, according to Kauffman: “In the present invention . . . the oxynitride film is a separate and distinct compound deposited over the underlying layer of silicon dioxide.” *Id.* at col. 2, ll. 47-50.

Nevertheless, the Office Action adopts an interpretation of the disclosure of Kauffman which is plainly contrary to the aforementioned express teaching. That is to say, despite Kauffman’s admonition that anti-reflective oxynitride layer 22 not be conflated with other interpoly materials, the Office Action asserts that Kauffman discloses “an anti-reflective interpoly layer 20/22”, insisting against the teaching of Kauffman that “the dielectric 22 taken with 20 is considered as the anti-reflective interpoly layer, i.e., the anti-reflective interpoly dielectric is consisting of layers 22 and 20 . . .” *See* p. 2, item 2, second paragraph of the Office Action.

However, the portions of Kauffman cited in the Office Action as support for its own interpretation of Figure 3 not only fail to provide that support, but discredit the

interpretation adopted by the Office Action. For example, according to every embodiment disclosed in Kauffman, first oxide layer 20 is formed on polysilicon layer 18, and oxynitride layer 22 is formed on first oxide layer 20. *See*, col. 3, l. 59 through col. 4, l. 3 of Kauffman, referring to Figures 3 and 4. In addition, in a preferred embodiment, second oxide layer 24 is formed on oxynitride layer 22. *Id.* at col. 4, ll. 23-32. Under no circumstances, however, does Kauffman teach or suggest that anti-reflective interpoly oxynitride layer 22 be formed on polysilicon layer 18. Consequently, and contrary to the interpretation advanced by the Office Action, Kauffman fails to teach or suggest an anti-reflective interpoly layer atop and in contact with a first polysilicon layer, as described by Applicants and specifically required by previously presented independent claim 1.

Thus, for all of the foregoing reasons, Applicants respectfully submit that at the time the invention defined by previously presented independent claim 1 was made, the invention was not anticipated by, nor would have been obvious in light of the disclosure provided by Kauffman. Consequently, Applicants respectfully assert that the invention described by previously presented independent claim 1 is patentably novel and inventive over Kauffman. As such, claims 2-7 depending from and further limiting patentable independent claim 1 are also patentably novel and inventive over Kauffman for at least the reasons presented above, and also for the additional limitations contained in each dependent claim.

B. Rejection of claims 1-5 and 7 under 35 U.S.C. § 102(b)

The Office Action rejects claims 1-5 and 7 for purported anticipation by U.S. Patent Number 5,888,870 to Gardner et al. (hereinafter "Gardner"). *See* p. 3-5, item 3 of the Office Action. For the reasons discussed below, Applicants respectfully submit that the present invention, as defined by previously presented independent claim 1, is patentably novel and inventive over Gardner.

As Applicants have previously explained, their disclosure is directed to an interpoly layer for use in a lithographic patterning process that is purposefully configured to have advantageous anti-reflective properties. According to the embodiment of the present invention specifically recited by previously presented independent claim 1, such a configuration includes a relationship between the index of refraction " n " of the material comprising the anti-reflective interpoly layer and the thickness " d " of that layer, such that d is an odd numbered multiple of approximately $\lambda_i/4n$, where λ_i is the wavelength of light produced by the lithographic light source.

By contrast to the principles of the present invention, as defined by previously presented independent claim 1, the teaching provided by Gardner is silent with respect to any relationship between the dimensions of the material layers utilized in its disclosed memory cell stack and the wavelength of light use for lithographic patterning in its fabrication process. This is unsurprising, however, in so far as the focus, in Gardner, is purely on the electrical properties of the disclosed interpoly materials, to the exclusion of any optical properties possessed by those materials.

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According to Gardner, the invention disclosed by that reference achieves its success by polishing the upper surface of a floating gate polysilicon layer, and depositing an interpoly dielectric comprising oxynitride or a relatively high-K ceramic on the polished surface. See col. 6, ll. 46-65 of Gardner. Moreover, the interpoly oxynitride disclosed in Gardner has its thickness optimized so as to resist breakdown while also being sufficiently thin to reduce capacitive coupling of the floating gate to a control gate. *Id.* at col. 7, ll. 2-10. Thus, Gardner is entirely indifferent to the optical properties of oxynitride layer, and consequently fails to disclose or suggest an "anti-reflective interpoly layer having an index of refraction n and a thickness d and being configured for use with a light having a wavelength λ_1 , such that d is an odd numbered multiple of approximately $\lambda_1/4n$," as described by Applicants and expressly required by previously presented independent claim 1.

For the foregoing reasons, Applicants respectfully submit that at the time the invention defined by previously presented independent claim 1 was made, the invention was not anticipated by, nor would have been obvious in light of the disclosure provided by Gardner. Consequently, Applicants respectfully assert that the invention described by previously presented independent claim 1 is patentably novel and inventive over Gardner. As a result, claims 2-5 and 7 depending from and further limiting patentable independent claim 1 are also patentably novel and inventive over Gardner for at least the reasons presented above, and also for the additional limitations contained in each dependent claim.

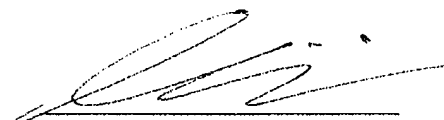
C. Rejection of Claim 6 under 35 U.S.C. § 103(a)

The Office Action rejects claim 6 under 35 U.S.C. § 103(a) as being unpatentable for purported obviousness over Gardner. *See* pp. 5-6, item 6 of the Office Action. However, as discussed above, Applicants respectfully assert that the invention described by previously presented independent claim 1 is patentably novel and inventive over Gardner. As such, claim 6 depending from and further limiting patentable independent claim 1 is also patentably novel and inventive over Gardner, for at least the reasons presented above and also for the additional limitations contained in dependent claim 6.

D. Conclusion

Based on the foregoing reasons, Applicants respectfully submit that the present invention, as defined by previously presented independent claim 1 and claims depending therefrom, is patentably novel and inventive. Moreover, Applicants assert that no new matter has been introduced herein. Thus, for all of the reasons presented above, an early allowance of claims 1-7 pending in the present application is respectfully requested.

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Respectfully Submitted,
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